

Prelim. Amdt.
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Attorney Docket No. 5005.1090

Amendments to the Claims:

Please cancel claims 1-20 as presented in the underlying International Application No. PCT/EP2003/006236 and add new claims 21-40 as shown in the listing of claims.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-20 (canceled).

Claim 21 (new): An optical device for combining a first light beam and at least one second light beam, the optical device comprising:

a first beam splitting device configured to split a first reference beam from the first light beam and a second reference beam from the second light beam;

a second beam splitting device configured to split a third reference beam from the first light beam and a fourth reference beam from the second light beam; and

a position detector configured to detect respective positions of the reference beams so as to enable at least one of a respective propagation direction and a respective position of at least one of the first and second light beams to be adjusted as a function of at least one of the detected respective positions of the reference beams.

Claim 22 (new): The optical device as recited in claim 21 wherein the first and second light beams each have a different respective wavelength.

Claim 23 (new): The optical device as recited in claim 21 wherein the first beam splitting device includes a first interface, and the second beam splitting device includes a second interface.

Claim 24 (new): The optical device as recited in claim 21 further comprising at least one dispersive element.

Claim 25 (new): The optical device as recited in claim 24 wherein the dispersive element includes at least one of a prism, a grating, and an acousto-optical element.

Claim 26 (new): The optical device as recited in claim 21 wherein the first and second beam splitting devices are parts of a same optical component.

Claim 27 (new): The optical device as recited in claim 26 wherein the same optical component includes a dispersive element.

Claim 28 (new): The optical device as recited in claim 21 wherein at least one of the respective propagation direction and the respective position of the first and second light beams are capable of being adjusted independently of each other.

Claim 29 (new): The optical device as recited in claim 21 further comprising at least one control element configured to adjust at least one of the respective propagation direction and the respective position of at least one of the first and second light beams.

Claim 30 (new): The optical device as recited in claim 29 wherein the at least one control element includes a tilting mirror.

Claim 31 (new): The optical device as recited in claim 29 wherein the at least one control element is configured to be driven as a function of at least one of the detected respective positions of the reference beams.

Claim 32 (new): The optical device as recited in claim 29 wherein the at least one control

element is disposed upstream of the first beam splitting device.

Claim 33 (new): The optical device as recited in claim 23 further comprising at least one control element configured to adjust a respective angle of incidence of at least one of the first and second light beam on the first interface.

Claim 34 (new): The optical device as recited in claim 23 further comprising at least one control element configured to adjust a respective striking location of at least one of the first and second light beams on the first interface.

Claim 35 (new): The optical device as recited in claim 21 wherein the position detector includes a CCD detector.

Claim 36 (new): The optical device as recited in claim 21 wherein the position detector includes a first detector configured to detect the respective position of each of the reference beams.

Claim 37 (new): The optical device as recited in claim 21 wherein the position detector is configured to simultaneously detect the reference beams.

Claim 38 (new): The optical device as recited in claim 21 wherein the position detector is configured to be calibrated for different respective detectable positions of the reference beams.

Claim 39 (new): A method for generating an illuminating light beam for a scanning microscope, the method comprising:

splitting a first reference beam from a first light beam and a second reference beam from a second light beam using a first beam splitting device;

splitting a third reference beam from the first light beam and a fourth reference beam

from the second light beam using a second beam splitting device;
detecting a respective positions of the reference beams using a position detector; and
adjusting at least one of a respective propagation direction and a respective position of at least one of the first and second light beams as a function of at least one of the detected respective positions of the reference beams.

Claim 40 (new): A scanning microscope comprising an optical device for combining a first light beam and at least one second light beam, the optical device comprising:

a first beam splitting device configured to split a first reference beam from the first light beam and a second reference beam from the second light beam;

a second beam splitting device configured to split a third reference beam from the first light beam and a fourth reference beam from the second light beam; and

a position detector configured to detect respective positions of the reference beams so as to enable at least one of a respective propagation direction and a respective position of at least one of the first and second light beams to be adjusted as a function of at least one of the detected respective positions of the reference beams.